

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (Currently Amended) A method for estimating a position of moving objects in a set of image data, wherein the objects are occluded in at least a portion of the image data, the method comprising the steps of:

identifying a position of an object in a first frame of image data acquired at a first time based on first positional values of the object and first stabilization values of the object, the stabilization values being associated with movement in background of the image data;

determining that the object is undetected in a second frame of image data acquired at a second time;

associating second positional values of the object and second stabilization values of the object with the second frame of image data;

estimating movement of the object to determine its estimated position in the second frame of image data by compensating for image destabilization and by using at least one of velocity and acceleration of the object and time between frames of image data; [[and]]

using the estimated position to determine a position of the object in a third frame of image data acquired at a third time; and

wherein the estimating step includes calculating positional difference values of the object using the first and second positional values, calculating stabilization difference values of the object using the first and second stabilization values, and subtracting

stabilization difference values from positional difference values for each frame of image data to generate stabilized positional difference values.

2. (Original) The method of claim 1, wherein the step of identifying comprises the step of:

maintaining a database of positional values of the object.

3. (Original) The method of claim 1, wherein the step of identifying comprises the step of:

maintaining a database of stabilization values of the object.

4. (Currently Amended) The method of claim 1, wherein the step of [[determining]] associating comprises the step of:

retrieving second positional values of the object from a database of positional values.

5. (Currently Amended) The method of claim 1, wherein the step of [[determining]] associating comprises the step of:

retrieving second stabilization values of the object from a database of stabilization values.

6. (Original) The method of claim 1, wherein the step of estimating comprises the step of:

calculating difference values between the first frame of image data and the second frame of image data for positional values of the object.

7. (Original) The method of claim 1, wherein the step of estimating comprises the step of:

calculating difference values between the first frame of image data and the second frame of image data for stabilization values of the object.

8. (Canceled)

9. (Previously Presented) The method of claim 1, wherein the step of estimating comprises the step of:

determining a data time interval using a time between frames of image data.

10. (Previously Presented) The method of claim 9, wherein the step of estimating comprises the step of:

determining an absolute displacement of the object by summing the stabilized positional difference values over the data time interval.

11. (Original) The method of claim 10, wherein the step of estimating comprises the step of:

calculating a constant acceleration of the object during the data time interval using a predetermined acceleration function.

12. (Original) The method of claim 11, wherein the step of estimating comprises the step of:

calculating a current velocity of the object during the data time interval using a predetermined velocity function.

13. (Original) The method of claim 12, wherein the step of estimating comprises the step of:

calculating an estimated movement of the object from the constant acceleration and current velocity using a predetermined position function.

14. (Original) The method of claim 13, wherein the step of estimating comprises the step of:

calculating an actual movement of the object by adding stabilization difference values to the estimated movement of the object.

15. (Original) The method of claim 14, wherein the step of estimating comprises the step of:

calculating an estimated position of the object in the second frame of image data by adding the actual movement of the object to the position of the object in the first frame of image data.

16. (Currently Amended) A system for estimating a position of moving objects in a set of image data, wherein the objects are occluded in at least a portion of the image data, the system comprising:

a memory that stores steps of a computer program to:

identify a position of an object in a first frame of image data acquired at a first time[[,]] based on positional values and stabilization values, the stabilization values being associated with movement in a background of the image data,

determine that the object is undetected in a second frame of image data acquired at a second time,

associating second positional values and second stabilization values with the second frame of image data;

estimate movement of the object to determine its estimated position in the second frame of image data by compensating for image destabilization and by using at least one of velocity and acceleration of the object and time between frames of image data,

use the estimated position to determine a position of the object in a third frame of image data acquired at a third time, [[and]]

wherein to estimate movement the computer program calculates positional difference values using the first and second positional values, calculates stabilization difference values using the first and second stabilization values, and [[subtract]] subtracts stabilization difference values from positional difference values for each frame of image data to generate stabilized positional difference values; and

a processor for accessing the memory to execute the steps.

17. (Original) The system of claim 16, wherein the memory stores steps of a computer program to:

maintain a database of positional values of the object.

18. (Original) The system of claim 16, wherein the memory stores steps of a computer program to:

maintain a database of stabilization values of the object.

19. (Currently Amended) The system of claim 16, wherein for the associating step the memory stores steps of a computer program to:

retrieve second positional values of the object from a database of positional values.

20. (Currently Amended) The system of claim 16, wherein for the associating step the memory stores steps of a computer program to:

retrieve second stabilization values of the object from a database of stabilization values.

21. (Original) The system of claim 16, wherein the memory stores steps of a computer program to:

calculate difference values between the first frame of image data and the second frame of image data for positional values of the object.

22. (Original) The system of claim 16, wherein the memory stores steps of a computer program to:

calculate difference values between the first frame of image data and the second frame of image data for stabilization values of the object.

23. (Cancelled)

24. (Previously Presented) The system of claim 16, wherein the memory stores steps of a computer program to:

determine a data time interval using a time between frames of image data.

25. (Original) The system of claim 24, wherein the memory stores steps of a computer program to:

determine an absolute displacement of the object by summing the stabilized positional difference values over the data time interval.

26. (Original) The system of claim 25, wherein the memory stores steps of a computer program to:

calculate a constant acceleration of the object during the data time interval using a predetermined acceleration function.

27. (Original) The system of claim 26, wherein the memory stores steps of a computer program to:

calculate a current velocity of the object during the data time interval using a predetermined velocity function.

28. (Original) The system of claim 27, wherein the memory stores steps of a computer program to:

calculate an estimated movement of the object from the constant acceleration and current velocity using a predetermined position function.

29. (Original) The method of claim 28, wherein the memory stores steps of a computer program to:

calculate an actual movement of the object by adding stabilization difference values to the estimated movement of the object.

30. (Original) The system of claim 29, wherein the memory stores steps of a computer program to:

calculate an estimated position of the object in the second frame of image data by adding the actual movement of the object to the position of the object in the first frame of image data.

31. (Currently Amended) A computer-readable medium containing a computer program that performs the steps of:

identifying a position of an object in a first frame of image data acquired at a first time based on first positional values of the object and first stabilization values of the object, the stabilization values being associated with movement of a background of the image data;

determining that the object is undetected in a second frame of image data acquired at a second time;

associating second positional values of the object and second stabilization values of the object with the second frame of image data

estimating movement of the object to determine its estimated position in the second frame of image data by compensating for image destabilization and by using at least one of velocity and acceleration of the object and time between frames of image data; and

using the estimated position to determine a position of the object in a third frame of image data acquired at a third time[; and]]

wherein the estimating step includes calculating positional difference values using first and second positional values, calculating stabilization difference values the object the object using first and second stabilization values, and subtracting [[subtract]] stabilization difference values from positional difference values for each frame of image data to generate stabilized positional difference values.

32. (Original) The computer-readable medium of claim 31, wherein the computer program performs the step of:

maintaining a database of positional values of the object.

33. (Original) The computer-readable medium of claim 31, wherein the computer program performs the step of:

maintaining a database of stabilization values of the object.

34. (Currently Amended) The computer-readable medium of claim 31, wherein for the associating step the computer program performs the step of:

retrieving second positional values of the object from a database of positional values.

35. (Currently Amended) The computer-readable medium of claim 31, wherein for the associating step the computer program performs the step of:

retrieving second stabilization values of the object from a database of stabilization values.

36. (Original) The computer-readable medium of claim 31, wherein the computer program performs the step of:

calculating difference values between the first frame of image data and the second frame of image data for positional values of the object.

37. (Original) The computer-readable medium of claim 31, wherein the computer program performs the step of:

calculating difference values between the first frame of image data and the second frame of image data for stabilization values of the object.

38. (Cancelled)

39. (Previously Presented) The computer-readable medium of claim 31, wherein the computer program performs the step of:

determining a data time interval using a time between frames of image data.

40. (Original) The computer-readable medium of claim 39, wherein the computer program performs the step of:

determining an absolute displacement of the object by summing the stabilized positional difference values over the data time interval.

41. (Original) The computer-readable medium of claim 40, wherein the computer program performs the step of:

calculating a constant acceleration of the object during the data time interval
using a predetermined acceleration function.

42. (Original) The computer-readable medium of claim 41, wherein the
computer program performs the step of:

calculating a current velocity of the object during the data time interval using a
predetermined velocity function.

43. (Original) The computer-readable medium of claim 42, wherein the
computer program performs the step of:

calculating an estimated movement of the object from the constant acceleration
and current velocity using a predetermined position function.

44. (Original) The computer-readable medium of claim 43, wherein the
computer program performs the step of:

calculating an actual movement of the object by adding stabilization difference
values to the estimated movement of the object.

45. (Original) The computer-readable medium of claim 44, wherein the
computer program performs the step of:

calculating an estimated position of the object in the second frame of image data
by adding the actual movement of the object to the position of the object in the first
frame of image data.